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# Adding remote ultrasound "knobology" control to remote just-in-time telementored trauma ultrasound: a randomised controlled trial

**Submission date**
12/02/2015

**Recruitment status**
No longer recruiting

**Registration date**
23/02/2015

**Overall study status**
Completed

**Last Edited**
25/06/2020

**Condition category**
Injury, Occupational Diseases, Poisoning

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

## Plain English summary of protocol

Background and study aims
Traumatic injury remains the leading cause of potentially preventable death in the Western world, especially in the Arctic, and is one, if not the most feared, pathology in Space Medicine. Resuscitative ultrasound is becoming a universal tool in emergency medicine that can capture a vast array of injuries and deranged physiology in the critically injured. An unfortunate practical reality however, is that ultrasound is very user dependant. Space Medicine has led the innovation however, in using advanced telecommunications to allow experts not at the scene of the trauma (remote expert) to guide non-experts to use on-scene ultrasound equipment to get clinically meaningful images. Furthermore, the Trauma Services group at the University of Calgary has led the world in examining the use of this technology in a clinical setting on earth. The Ultrasonix Corporation, under contract to the Canadian Space Agency (CSA), has developed an advanced Graphic User Interface (GUI) which allows a expert to control the ultrasound settings of a Ultrasonix Ultrasound remotely and to communicate with the non-expert user over a unique voice and video connection. A consistent finding of this experience has been the sentiment that being able to transfer the responsibility of controlling the ultrasound settings (knobology) from the on-site inexperienced user to the remote expert. The aim of this study is to test whether the use of a remote controlled GUI improve the usefulness of emergency “just-in-time” remote telementored ultrasound as measured by examining the accuracy of the examination

Who can participate?
Firefighters from the city of Edmonton that have not had any prior experience with trauma ultrasound.

What does the study involve?
Participants are randomly allocated into one of two groups. Those in group 1 perform a telementored ultrasound examination on an ultrasound phantom (a training model that gives realistic ultrasound images when scanned) to which fluid has been added. Those in group 2 perform a telementored ultrasound examination on an ultrasound phantom to which fluid has not been added. All participants are mentored by remote ultrasound experts who can view their

hand movements and provide 2-way communication. The intervention being randomized is the remote control of the ultrasound machine "knobology" by the remote mentor or not which is randomly assigned. The accuracy of the mentored examination is determined by the known “truth” regarding the volume of fluid added to the phantom. The time needed to complete the examination is also recorded with and without GUI assistance. All volunteers and remote mentors are asked to complete questionnaires for each examination in which all responses will be anonymous, regarding how useful they found the technique and the GUI, any suggested modifications to the GUI, and other general comments.

What are the possible benefits and risks of participating?
Not provided at time of registration

Where is the study run from?
Foothills Medical Centre, Calgary (Canada)

When is the study starting and how long is it expected to run for?
October 2014 to March 2015

Who is funding the study?
Canadian Space Agency

Who is the main contact?
Professor Andrew Kirkpatrick
andrew.kirkpatrick@albertahealthservices.ca

# Contact information

### Type(s)
Scientific

### Contact name
Dr Andrew Kirkpatrick

### Contact details
Trauma Services
1403 29 St NW
Calgary
Canada
T2N 2T9
4039442888
andrew.kirkpatrick@albertahealthservices.ca

# Additional identifiers

### Protocol serial number
20949

# Study information

### Scientific Title

Medical ultrasound remote access/control interface testing requirements for a graphic user interface (GUI)

## Study objectives
The aim is to test the usefulness of a remote ultrasound examination that utilizes a graphic user interface to assist with the knobology of the remote ultrasound machine.

## Ethics approval required
Old ethics approval format

## Ethics approval(s)
University of Calgary Office of Medical Bioethics, 06/07/2007, ref: 20949

## Study design
Randomised controlled trial

## Primary study design
Interventional

## Study type(s)
Diagnostic

## Health condition(s) or problem(s) studied
Trauma Resuscitation

## Interventions
Pre-hospital responders unfamiliar with trauma ultrasound will be randomized to perform a tele-mentored ultrasound examination on an ultrasound phantom to which fluid has been randomly added or not. They will be mentored by remote ultrasound experts who can view their hand movements and provide 2-way communication. The intervention being randomized is the remote control of the ultrasound machine "knobology" by the remote mentor or not which will be randomly assigned

## Intervention Type
Device

## Phase
Not Applicable

## Primary outcome(s)
The accuracy of the mentored examination to detect any free fluid within the phantom (Binary yes/no determination) with and without GUI assistance.

## Key secondary outcome(s))
The relative user satisfaction will be assessed using a previously verified post-examination satisfaction survey with the Likert scores compared for those using the GUI versus not.

## Completion date
30/03/2015

# Eligibility

### Key inclusion criteria
1. Pre-hospital care provider
2. Willingness to participate
3. Command of English

### Participant type(s)
Health professional

### Healthy volunteers allowed
No

### Age group
Adult

### Sex
All

### Total final enrolment
101

### Key exclusion criteria
1. Any prior experience with ultrasound
2. Unwilling to participate
3. Unable to speak English

### Date of first enrolment
29/10/2014

### Date of final enrolment
30/05/2015

# Locations

### Countries of recruitment
Canada

### Study participating centre
**Foothills Medical Centre**
Trauma Services
1403 29 St NW
Calgary
Canada
T2N 2T9

# Sponsor information

**Organisation**
Canadian Space Agency

**ROR**
https://ror.org/03a1gte98

# Funder(s)

**Funder type**
Government

**Funder Name**
Canadian Space Agency

**Alternative Name(s)**
Agence Spatiale Canadienne, The Canadian Space Agency (CSA), L'Agence spatiale canadienne (ASC), Government of Canada, Canadian Space Agency, csa_asc, canadianspaceagency, CSA, ASC

**Funding Body Type**
Government organisation

**Funding Body Subtype**
National government

**Location**
Canada

# Results and Publications

## Individual participant data (IPD) sharing plan

**IPD sharing plan summary**
Available on request

**Study outputs**

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Results article | results | 01/05/2016 | 25/06/2020 | Yes | No |
| Participant information sheet | Participant information sheet | 11/11/2025 | 11/11/2025 | No | Yes |